

CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

WALTER M. DICKIE, M.D., Director

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EDITOR

*The Itinerant Laborer as a Typhoid Problem**

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Conclusions are never safe when drawn from generalities. In consequence, this discussion will be limited to a small area, and even in this, to the more or less brief period of but seven years.

The area selected is that of San Joaquin County, comprising approximately fifteen hundred square miles and a population varying from 80,000 in 1920, to that of 103,000 in 1930. It is difficult to estimate the numbers of its component racial groups, and in view of its seasonable and fluctuating labor conditions, it is questionable if even our recent census will reveal any other than an index of true conditions.

The east side of this area approaches the foothills of the Sierras and is characterized by grain and grazing areas. The southeast is bordered by the Stanislaus River, with its sandy irrigated stretches well suited to small fruit and vegetable farming, alfalfa and other forage crops, and dairying. The Coast Range invades the southwest corner, its slopes adaptable to hay, grain, legumes and stock raising. The north portion is intersected by the Mokelumne River, its valleys filled with rich vineyards and orchards.

On the west, the Sacramento, Mokelumne and San Joaquin rivers join in forming the upper part of San Francisco Bay. This junction, less than twenty feet above sea level, was in years past a vast swamp, overgrown with tules. As American civilization progressed, gradual reclamation of this delta area occurred. Engineering with its huge dredgers for creating and maintaining levees has transformed this

area into a multitude of islands surrounded by a network of navigable waterways or canals, in total length of over 700 miles in the three counties of San Joaquin, Sacramento and Contra Costa, four-sevenths of which are in the first named. The peat soil of these islands is made up of the river silt and decaying vegetation of centuries, and their surfaces are usually three to six feet below the water levels of the channels surrounding them. Ground seepage is controlled by drainage ditches and electrical pumps, and irrigation is a simple matter of siphoning over levees.

From the engineering problems involved, it can be seen that maintenance of this reclamation area is a matter of large capital, and, unless closely and harmoniously organized, precludes the possibility of small farms or ranches. In natural sequence we have the large landowner or lessee, or the corporation and hired laborers, coming and going in accordance with seasonal demands. In further sequence, we have the seemingly only economical method of caring for these transients, i.e., the labor camp which, with off-season facilities for five to fifteen individuals, may, during the rush of harvest, be forced to care for ten or twenty times that number.

Additional difficulty is encountered through the fact that ordinary sanitary sewage disposal systems are impracticable. On account of water seepage from surrounding channels, cesspools and leeching tiles can not be used, and chemical or septic tanks, even of wood, sink beyond finding. There remains but one

* Read before Department of Health, League of California Municipalities, Long Beach, October 7, 1930.

recourse, the pit privy, usually shallow-vaulted, built on the adjacent levee slope. Frequently, where effort has been made to establish a camp or residence of some permanence, sewers discharge into a drainage ditch from which at its terminus, the effluent is pumped into the channel, or perhaps where the camp or residence sits high upon the levee, the sewer may discharge directly into the channel.

Still further difficulty lies in inability to secure local water supply, except that from river channels, and commonly the supply is obtained by the simple procedure of siphoning over or through the levee. This water is presumed to be used only for laundry and bath purposes, for employers have, through penalties of the Workman's Compensation Act, learned that it is advisable to provide only a safe water for drinking, and this is carried to camps from Stockton by launches operating on regular routes and schedules. One can appreciate, however, the carefulness (?) which the average camp cook will exercise in using only the imported supply for washing of uncooked vegetables for table purposes, and since it is quite common to find a sewage disposal outlet within from twenty to fifty feet of a water intake pipe, it is easy to discover the source of many water-borne infections.

The crops of this area, i.e., asparagus, celery, beans, peas, sugar beets, potatoes, etc., are of the back-bending variety, for care of which the short-statured races are best suited. Hence, we find the Orientals and Mexicans, with the European or American overseers. The first predominate, with the Filipino leading in numbers, having, since the passage of the Alien Land Act, largely supplanted the Japanese. However, it is difficult to conceive of any south sea island which is not represented, as a survey of some three years ago revealed eighteen different Oriental and south sea racialities speaking twenty-eight different languages and dialects. Our educational literature is issued in English, Spanish, Japanese, and three dialects of the Filipino languages. However, despite our efforts at education, practically every individual, following native customs, manifests a preference for surface water, whether it be from channel or drainage ditch.

The description of this delta area may seem over-emphasized, but it will provide some background for realization of what it affords in the way of a typhoid problem. Fortunately, most of the inhabitants are adults, and with exception of epidemic meningitis, which may be accentuated under camp conditions of any kind, our communicable disease problem is largely limited to that of typhoid or other intestinal infections.

San Joaquin County has four incorporated cities: Stockton, of approximately fifty thousand; Lodi of eight, Tracy of five, and Manteca of two thousand. All city water supplies are from deep wells. A number of large industries, hotels and apartment houses in Stockton have private wells, and some fifteen or twenty cross connections exist. All public or semi-public supplies are checked by our laboratory at biweekly intervals, and thus far no suspicion has ever attached to any. The water service company, on advice of the Bureau of Sanitary Engineering of the State Department of Health, is, however, making an effort to eliminate these cross connections. Rural water supplies and those of the smaller villages organized as water districts are also from deep wells.

In some of the subdivisions of Stockton, outside city limits, residents maintain private wells, the supply usually being obtained from the second or third water strata at a depth of from sixty to one hundred and fifty feet. Between each of these water strata lies an area of impervious clay or hardpan. The first of these may be found at a depth of from twelve to sixteen feet, and since the usual method of sewage disposal is by cesspool, difficulty is encountered during the wet season by surface saturation of the upper soil with sewage. To eliminate this many thoughtless individuals, often encouraged by well drillers who need occupation, drill sewer wells, sometimes penetrating to the second and third water sands. While the Department halts these projects whenever discovered, there are many of these hidden wells impossible to discover. Despite our fears, laboratory checks of water supplies in these areas have failed to reveal any serious contamination.

Stockton sewage is disposed through two outfalls by means of Imhoff tanks into the San Joaquin River. An attempt was made some years ago to chlorinate the effluent, but on account of the inefficiency of the method has been temporarily abandoned. With the present volume of water in the river, dilution is great, and with a slowly moving current sedimentation must undoubtedly care for whatever pollution occurs within a comparatively short distance. At any rate, there seems to be little or no connection between the main stream and typhoid infections occurring in the delta. Lodi has an activated sludge digestive system capable of discharging a sterile effluent. Disposal is made through a large drainage ditch and thence to the Mokelumne River. Tracy also disposes through Imhoff tanks into the old channel of the San Joaquin, while Manteca uses sand bed filters.

Throughout the rural area, farm houses equipped with water pressure systems and flush toilet sewage

disposal through septic tanks, cesspool or tile leeching are the rule rather than the exception.

On the whole, water-borne typhoid, except in the delta region, has never evidenced itself.

All market milk supplies are under the immediate supervision of the health department, and for the county as a whole 75.5 per cent of the total volume is pasteurized. Many raw milk dealers have voluntarily required physical and laboratory examinations of all employees. One milk-borne outbreak from a raw supply occurred in Stockton in 1924, reaching a total of eighty cases with four deaths. This experience was a severe lesson to raw milk dealers and has resulted in increased precautions by both dealers and the health department. Despite these, the large amount unpasteurized, amounting to 100 per cent in the smaller villages, is not without its possibilities.

While the county has few factories or large industries, the labor turnover, due to a variety of agricultural and fruit crops, is quite large. In addition, Stockton is a major recruiting center for labor for the mines, logging, live stock, water conservation and other engineering projects of the Mother Lode country and annually sends out about twenty-five thousand men. This number is only exceeded by the labor centers of Los Angeles and San Francisco, and possibly Oakland.

When this army, constituted as it is from everywhere, and living under primitive working conditions, is considered, its typhoid fever potentialities can readily be seen, and these potentialities are revealed as actual by epidemiological investigation.

A detailed epidemiological discussion of typhoid fever is not pertinent to this topic, and therefore it will be confined to the one feature—that of the effect of the itinerancy upon our rate. By way of explanation, it may be said that the epidemiological division of the State Department of Health endeavors to be charitable to our various communities by charging cases to the point of apparent origin. However, in this tabulation acceptance is made of all cases reported or coming to the attention of our department regardless of origin. Perhaps, also, this will obviate some differences of opinion as to sources of infection.

Our own study dates from January 1, 1923, and up to August 1, 1930, a period of seven years and eight months. That typhoid fever seemingly has been a perennial problem is indicated by mortality figures dating from 1915 to 1923, when the rates averaged two to three times that of the state as a whole. Morbidity statistics are conspicuous by absence and seemingly little or no epidemiological study was made. This is evidenced by an average fatality rate during this period of 25 per cent, that is, for every death only four cases were reported. In 1915 only six cases were reported whereas eleven deaths were registered. During the period of our study the average fatality rate has been only 8½ per cent, and for the past three years only 6 per cent.

Of the 564 cases reported during the past eight years 327 were registered as laborers. This was 58 per cent of the total, or if we except the cases resulting from the milk-borne outbreak in 1924, largely composed of children, and include only the casual typhoid cases, the percentage classified as day laborers amounted to 67 per cent.

By further analysis, 209 (of which five were reported from other counties or cities in California), or 64 per cent, of these

laborers were ascribed to local origin, while 118, or 36 per cent, were traceable to sources outside the county. Of this latter group, 110 apparently originated in other California counties and eight outside the state. Seventy-four of the 110 California cases originated in the delta regions of the neighboring counties of Sacramento, Contra Costa and Solano.

Patients who had lived at one place for one year or more have been classified as fixed residents. Out of the total of 327 cases sixty-seven, or 20.4 per cent, were so regarded. Of the remaining 260, or 79.6 per cent, approximately three-fourths had resided at the point where they acquired infection less than three months. The menace of the delta conditions is reflected in the fact that of the total 327, 227, or 69 per cent, originated within that area. Only thirty-nine of these were fixed residents. (Instances.)

Racial attacks are perhaps of little significance except as to possibilities of "carrier" states in relation to future occupations, and one can only speculate as to how many of these persons classified as laborers may become handlers of milk or other foods. This speculation can be exercised by the fact that of the 327, 134 were white, 51 were Japanese, 95 were Filipino, 3 Hindu and 42 Mexican.

Only five of the group were engaged in the preparation of table foods, but when one considers that the Japanese, Mexican and Filipino populations constitute a class engaged largely in the handling of fruits and vegetables, many of them eaten in the raw state, it can be appreciated that despite our laboratory procedure for the detection of typhoid bacilli in the feces and urine of convalescents, there are immense possibilities for "carrier" infection of these raw products.

During the first year of our departmental investigation of typhoid prevalence, we quickly realized the futility of typhoid control by sanitation methods. Economic conditions, racial customs, and nomadic environments were factors which only a small army might hope to control. There was left to us only one remedy—that of immunization—and despite the skepticism of some of our immunologists as to its efficacy, results have seemingly justified our faith.

By and with the assistance of a representative of the Rural Sanitation Division of the United States Public Health Service, and the generosity of the Hygienic Laboratory of the State Department of Health, which furnished us with typho-bacterins, a more or less energetic effort has been made to immunize large numbers of itinerant laborers each year. We have, of course, concentrated our efforts in the delta region, and despite the many difficulties encountered have achieved what we deem favorable results. In the past six years 5450 complete (i. e., three doses) treatments have been administered. This does not take into account fully as many more who received but one or two doses. Our experience has been that not a single case of typhoid has developed in any one who had received complete dosage, or indeed two doses, within a five-year period, which, considering the thousands who are engaged under unchanged environment, is more than a coincidence.

Unfortunately, our efforts can not reach beyond our own boundaries, and although the health officer of our neighboring county, Sacramento, has made one or two efforts to carry on the same campaign, funds have not been provided so that his efforts may be continuous.

As a further handicap, the constant turnover in labor presents a constantly fresh stream of nonimmunes, and accentuates that one local effort can manifest but small effect upon a state-wide problem. Whether its solution lies in action by a state agency or in a coordinated program by local boards of health admits of discussion. As tentative suggestions for the latter, the following are offered:

1. Local support of the Camp Sanitation Division of the State Housing and Immigration Commission in securing better sanitation of labor and auto camps.
2. Close supervision of typhoid convalescents and carriers.
3. Education of laborers in self-protection from sanitary hazards of certain well known typhoid areas and in the value of immunization.
4. Free immunization, well advertised at labor headquarters, employment bureaus and lodging houses.

The unknown; that is what frightens weak minds.—
Louis Blanc.

MORBIDITY***Diphtheria.**

55 cases of diphtheria have been reported, as follows: Alameda County 4, Hayward 2, Livermore 1, Oakland 1, Pittsburg 1, Los Angeles County 4, Huntington Park 1, Inglewood 2, Long Beach 2, Los Angeles 14, Madera County 1, Merced County 1, Monterey 1, Orange County 1, La Habra 1, Sacramento 2, San Bernardino 1, San Diego 1, San Francisco 2, Santa Cruz County 1, Petaluma 1, Modesto 6, Patterson 2, Tulare County 1, Exeter 1.

Scarlet Fever.

58 cases of scarlet fever have been reported, as follows: Alameda 2, Oakland 1, Piedmont 1, San Leandro 2, Fresno 1, Kern County 1, Los Angeles County 4, Glendora 1, Inglewood 1, Los Angeles 8, Pasadena 1, Monterey County 2, Sacramento 5, Hollister 1, San Bernardino County 1, Ontario 1, Upland 1, San Diego 1, San Francisco 8, Stockton 3, San Luis Obispo 2, Santa Clara County 1, Tulare County 4, Visalia 1, Ventura County 1, Yolo County 1, Davis 1, Woodland 1.

Measles.

123 cases of measles have been reported, as follows: Alameda County 5, Berkeley 4, Hayward 4, Oakland 2, Chico 11, Contra Costa County 1, Los Angeles County 3, Long Beach 5, Los Angeles 21, Redondo 11, South Pasadena 1, Torrance 1, Santa Ana 1, Placentia 1, Riverside County 6, Ontario 1, San Diego 19, San Francisco 7, Santa Barbara 1, San Jose 2, Tulare County 2, Ventura County 9, Oxnard 5.

Smallpox.

4 cases of smallpox have been reported, as follows: Alameda County 1, Richmond 1, Anaheim 1, Stanislaus County 1.

*From reports received on October 20th and 21st for week ending October 18th.

Typhoid Fever.

14 cases of typhoid fever have been reported, as follows: Kern County 2, Los Angeles County 2, Los Angeles 5, Livingston 1, San Francisco 1, Sonoma County 1, Red Bluff 1, California 1.**

Whooping Cough.

81 cases of whooping cough have been reported, as follows: Alameda 8, Berkeley 2, Hayward 1, Oakland 1, Orland 2, Los Angeles County 7, Glendale 1, Long Beach 1, Los Angeles 26, Santa Monica 3, Huntington Beach 2, Laguna Beach 1, Sacramento 6, San Bernardino 4, San Diego 3, San Francisco 6, Stockton 1, Ventura County 1, Wheatland 5.

Meningitis (Epidemic).

4 cases of epidemic meningitis have been reported, as follows: Los Angeles 3, Orange County 1.

Food Poisoning.

6 cases of food poisoning have been reported, as follows: Los Angeles 5, San Bernardino County 1.

Undulant Fever.

Orange County reported one case of undulant fever.

Poliomyelitis.

87 cases of poliomyelitis have been reported, as follows: Oakland 2, Fresno County 2, Eureka 4, Fortuna 1, Los Angeles County 2, Alhambra 1, Covina 1, El Monte 2, Long Beach 4, Los Angeles 12, Maywood 1, Belvedere 1, Riverside County 2, San Francisco 24, Lodi 1, San Luis Obispo County 3, San Luis Obispo 10, Santa Clara County 3, San Jose 2, Stanislaus County 5, Ventura County 3, Woodland 1.

**Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state throughout the incubation period of the disease. These cases are not chargeable to any one locality.

COMMUNICABLE DISEASE REPORTS

Disease	1930				1929			
	Week ending			Reports for week ending Oct. 18 received by Oct. 21	Week ending			Reports for week ending Oct. 19 received by Oct. 22
	Sept. 27	Oct. 4	Oct. 11		Sept. 28	Oct. 5	Oct. 12	
Anthrax	0	1	0	0	3	0	0	0
Chickenpox	107	88	134	134	81	114	102	188
Coccidioides Granuloma	0	1	0	0	0	0	1	2
Diphtheria	44	43	58	55	42	42	56	68
Dysentery (Amoebic)	1	1	0	0	0	1	0	1
Dysentery (Bacillary)	1	3	3	10	24	0	1	1
Encephalitis (Epidemic)	1	1	1	0	5	0	1	0
Erysipelas	5	7	8	6	19	8	9	14
Food Poisoning	3	1	4	6	5	24	0	2
German Measles	1	7	7	9	8	9	8	8
Gonococcus Infection	110	132	148	143	146	89	129	142
Hookworm	0	0	0	1	0	0	0	1
Influenza	29	31	26	20	21	24	30	25
Jaundice (Epidemic)	0	0	1	0	0	0	0	0
Leprosy	0	1	0	0	1	0	0	1
Malaria	0	1	1	1	1	6	2	1
Measles	59	82	69	123	26	44	44	52
Meningitis (Epidemic)	4	0	3	4	7	7	6	9
Mumps	111	117	97	106	222	195	201	177
Ophthalmia Neonatorum	0	0	1	0	0	0	0	0
Paratyphoid Fever	1	1	0	0	0	0	1	0
Pellagra	2	3	0	0	4	0	1	2
Pneumonia (Lobar)	29	22	42	38	56	26	45	43
Poliomyelitis	70	71	76	87	6	1	5	5
Rabies (Animal)	21	13	9	20	15	16	16	16
Scarlet Fever	67	82	83	58	102	76	148	141
Smallpox	12	16	23	4	28	16	22	17
Syphilis	129	161	154	167	178	144	145	130
Tetanus	1	2	1	2	5	0	1	1
Trachoma	4	1	1	2	1	12	6	1
Trichinosis	1	1	1	0	0	0	0	0
Tuberculosis	232	227	200	235	172	178	199	212
Tularemia	2	0	1	0	0	0	0	0
Typhoid Fever	18	18	14	14	6	13	18	12
Undulant Fever	5	3	3	1	1	5	4	2
Whooping Cough	80	100	105	81	100	116	112	107
Totals	1,150	1,238	1,274	1,327	1,285	1,166	1,313	1,381

Epidemic poliomyelitis still rears its ugly head.

Smallpox dropped to four cases reported last week

Diphtheria shows a rise.

Animal rabies is far too prevalent.